

### **CLAIMS**

1. Modular internal combustion engine (1) comprising an engine housing (17, 117) with a crankshaft drive (40) having at least one reciprocating piston (4) in a cylinder (2), which acts on a crankshaft (6) by means of a connecting rod (5), and a variable-speed gear box (10) connected to the crankshaft (6) via a disengaging clutch (8), and a gearbox output train (12) which connects to at least one drive shaft (15) of a vehicle, **characterized in that** the internal combustion engine (1) is provided with least one main module (26) including the subassemblies engine housing (17), crankshaft drive (40), variable-speed gearbox (10), and gearbox output train (12), and at least one auxiliary module (27, 28, 29, 30, 31, 32) attachable to the main module (26), and that no mechanical connection between the variable-speed gearbox (10) and the gearbox output train (12) is provided within the main module (26) but that a rotational connection is facilitated by attaching a first auxiliary module (27) to the main module (26).
2. Internal combustion engine (1) according to claim 1, **characterized in that** the main module (26) includes at least one of the parts crankshaft (6), mass balancer shaft (25), piston (4), connecting rod (5) or switchable clutch (8).
3. Internal combustion engine (1) according to claim 1 or 2, **characterized in that** the first auxiliary module (27) contains at least one gear step from the following group: simple gear (27a), reverse gear (27b), reduction gear (27c), crawler reduction gear (27d), the axis distance of this gear step preferably corresponding to the axis distance between an output shaft (11) of the variable-speed gearbox (10) and a secondary input shaft (13) of the gearbox output train (12).

4. Internal combustion engine (1) according to any of claims 1 to 3, **characterized in that** the first auxiliary module (27) has the same housing wall (33, 133) in all gear variants.
5. Internal combustion engine (1) according to any of claims 1 to 4, **characterized in that** a second auxiliary module (28) with an output gear (28b) for a power take-off (PTO) shaft (28a) can be attached to a gear shaft (9, 11) of the variable-speed gearbox (10).
6. Internal combustion engine (1) according to any of claims 1 to 5, **characterized in that** a third auxiliary module (29) with a shiftable reverse gear (29a) for the variable-speed gearbox (10) can be attached to the main module (26).
7. Internal combustion engine (1) according to any of claims 1 to 6, **characterized in that** a fourth auxiliary module (30) with a differential gear (30a) for the gearbox output train (12) can be attached to the main module (26).
8. Internal combustion engine (1) according to claim 7, **characterized in that** a fifth auxiliary module (31) with an output driving gear (31a) for the gearbox output train (12) can be attached to the main module (26) or the fourth auxiliary module (30).
9. Internal combustion engine (1) according to any of claims 1 to 8, **characterized in that** a sixth auxiliary module (32) with a centrifugal clutch (32a) can be attached to the main module (26) at the input side of the variable-speed gearbox (10).
10. Internal combustion engine (1) according to any of claims 1 to 9, **characterized in that** the main module (26) includes an engine housing (17) configured for one cylinder (2) or an engine housing (117) for two cylinders (2).

11. Internal combustion engine (1) according to any of claims 1 to 10, **characterized in that** at least five shafts, and preferably at least crank shaft (6), balancer shaft (25), first gearbox shaft (9), second gearbox shaft (11) and first secondary shaft (13) are positioned in one and the same plane, which is preferentially a first partitioning plane (34) between two housing parts (18, 19; 118, 119).
12. Internal combustion engine (1) according to any of claims 1 to 11, **characterized in that** the main module (26) can be used for at least two types of vehicles from the group of motor-rickshaws, ATVs, small tractors and micro-cars.
13. Method for the production of engine housings (17, 117) for internal combustion engines (1) with one or more cylinders (2) according to any of claims 1 to 12, **characterized in that** all surfaces to be machined and all bores of the engine housing (17) with  $n$  cylinders have the same position as a subset of all surfaces and bores of a similar engine housing (117) with a higher number  $m > n$  of cylinders and that the engine housing (17) with  $n$  cylinders is machined on a working station whose tools are configured and adjusted for the machining of the similar engine housing (117) with the higher number  $m$  of cylinders.